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Clean Version of Pending Claims

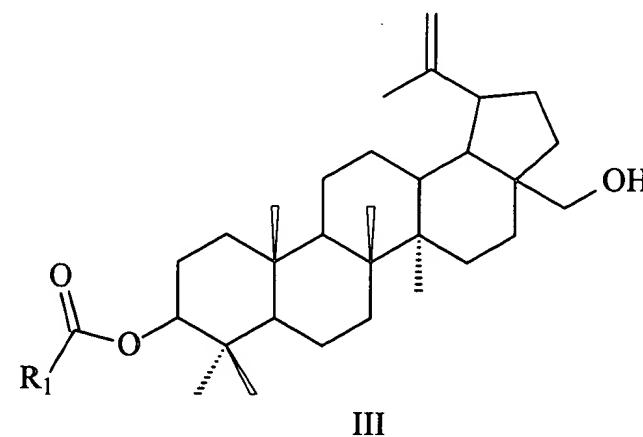
METHOD FOR MANUFACTURING BETULINIC ACID

Applicant: Pavel A. Krasutsky

Serial No.: 09/840,627

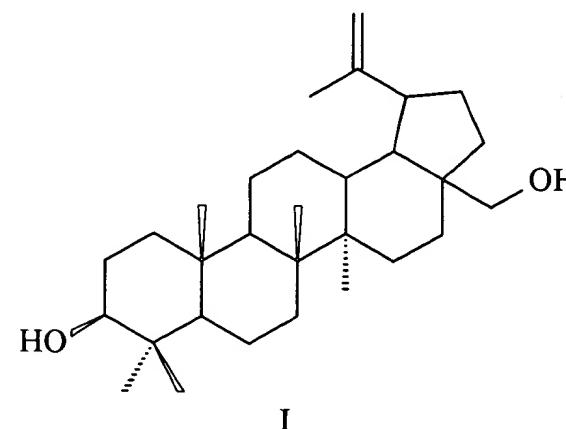
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1. (ONCE AMENDED) A process for preparing a compound of formula III

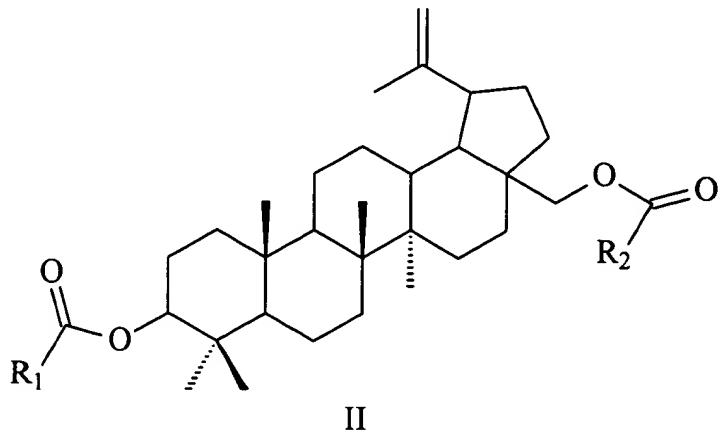


comprising:

- (1) acylating a compound of formula I



to provide a corresponding compound of formula II



wherein R<sub>1</sub> and R<sub>2</sub> are each independently (C<sub>1</sub>-C<sub>10</sub>)alkyl, (C<sub>2</sub>-C<sub>10</sub>)alkenyl, (C<sub>2</sub>-C<sub>10</sub>)alkynyl, or (C<sub>6</sub>-C<sub>10</sub>)aryl, wherein any alkyl, alkenyl, alkynyl, or aryl of R<sub>1</sub> and R<sub>2</sub> can be optionally substituted with one or more halo, nitro, cyano, trifluoromethyl, hydroxy, SR or NRR, wherein each R is independently H or (C<sub>1</sub>-C<sub>10</sub>)alkyl; and

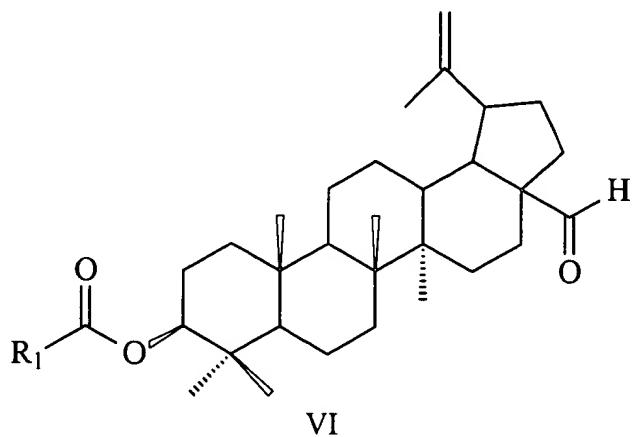
(2) alcoholyzing a compound of formula II to provide a corresponding compound of formula III.

2. The process of claim 1 wherein the acylating comprises heating to reflux in acetic acid and acetic anhydride for about 2 hours to about 5 hours.

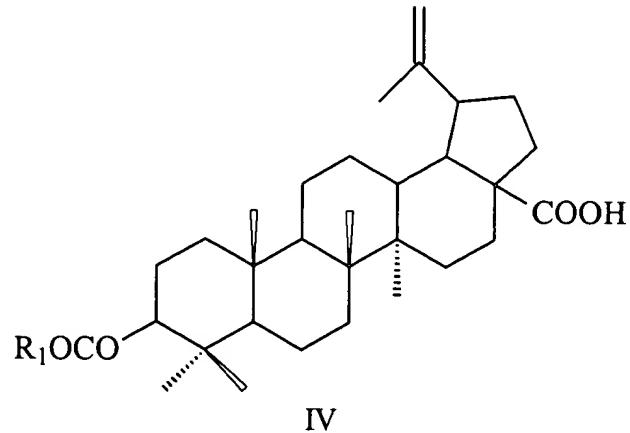
3. The process of claim 1 wherein the acylating comprises heating in pyridine and benzoyl chloride at about 50°C to about 60°C for about 20 hours to about 30 hours.

4. The process of claim 1 wherein the alcoholyzing comprises heating in the presence of an aluminum alkoxide and an anhydrous alcohol.

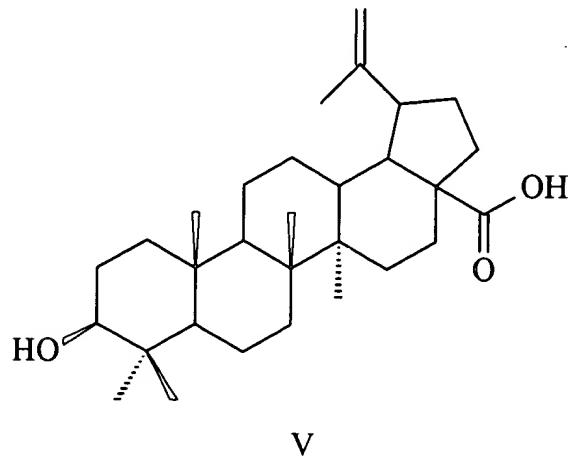
5. (ONCE AMENDED) The process of claim 4 wherein the aluminum alkoxide is aluminum isopropoxide.
6. (ONCE AMENDED) The process of claim 4 wherein the alcohol is isopropanol.
7. (ONCE AMENDED) The process of claim 1 wherein the acylating is carried out employing an acid anhydride, a carboxylic acid, or an acid chloride.
8. (ONCE AMENDED) The process of claim 1 wherein the acylating is carried out employing acetic anhydride, benzoyl anhydride, maleic anhydride, phtalic anhydride, succinic anhydride, acetic acid, benzoic acid, acetyl chloride, pentanoyl chloride, or benzoyl chloride.
9. The process of claim 1 further comprising oxidizing the compound of formula III to provide a compound of formula VI



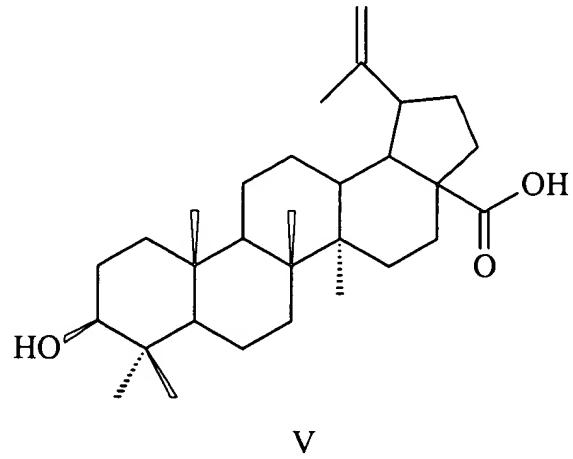
10. The process of claim 9 further comprising oxidizing the compound of formula VI to provide a compound of formula IV



11. The process of claim 10 further comprising deprotecting the compound of formula IV to provide a compound of formula V

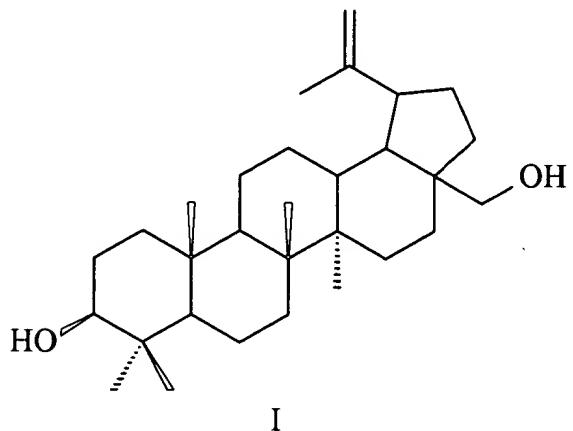


12. (ONCE AMENDED) A process for preparing the compound of formula V

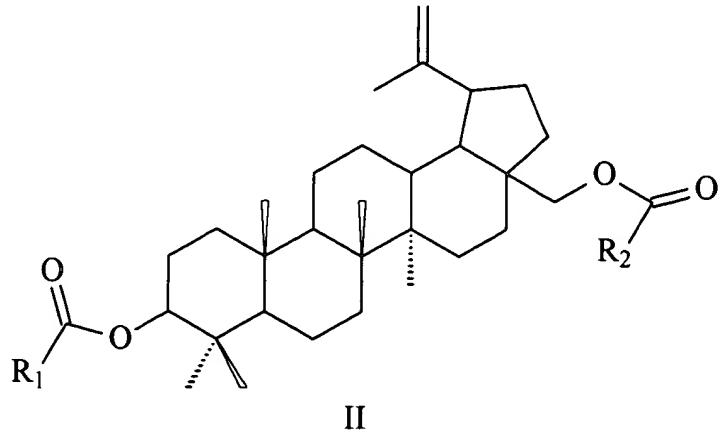


comprising:

- (1) acylating a compound of formula I

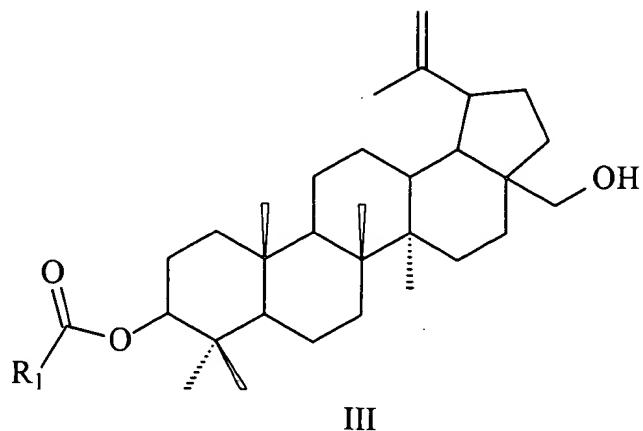


to provide a corresponding compound of formula II

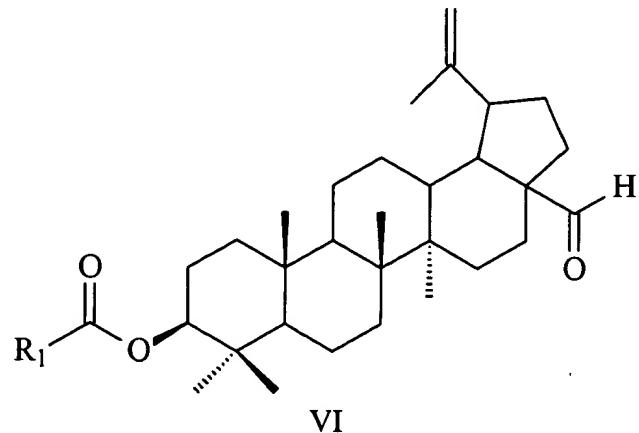


wherein  $R_1$  and  $R_2$  are each independently  $(C_1-C_{10})$ alkyl,  $(C_2-C_{10})$ alkenyl,  $(C_2-C_{10})$ alkynyl, or  $(C_6-C_{10})$ aryl, wherein any alkyl, alkenyl, alkynyl, or aryl of  $R_1$  and  $R_2$  can be optionally substituted with one or more halo, nitro, cyano, trifluoromethyl, hydroxy, SR or NRR, wherein each R is independently H or  $(C_1-C_{10})$ alkyl;

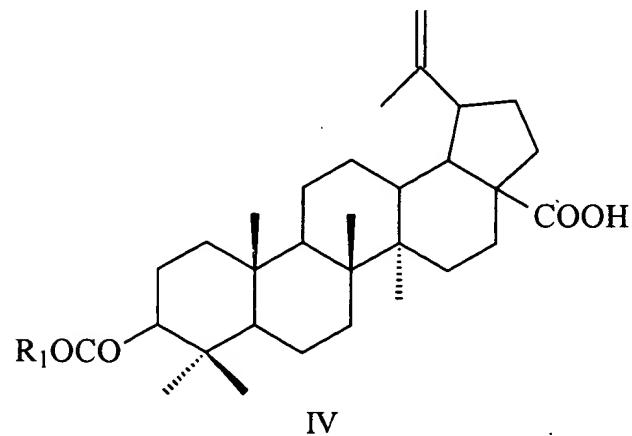
(2) alcoholizing a compound of formula II to provide a corresponding compound of formula III;



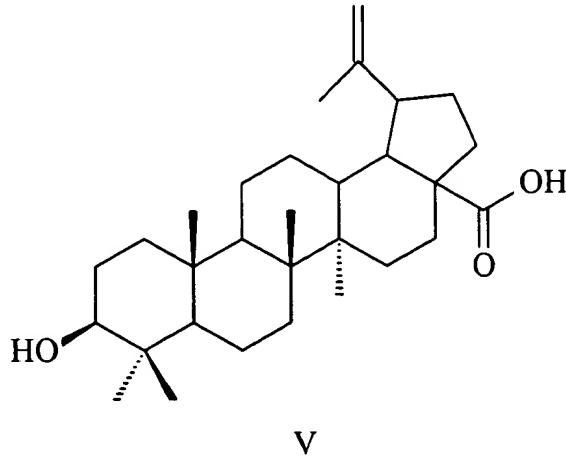
(3) oxidizing the compound of formula III to provide a corresponding compound of formula VI;



(4) oxidizing the compound of formula VI to provide a compound of formula IV;  
and



(5) deprotecting the compound of formula IV to provide the compound of formula V.



13. (ONCE AMENDED) The process of claim 12 wherein the alcoholyzing is carried out for about 0.5 hours to about 5 hours.

14. The process of claim 12 wherein the alcoholyzing comprises heating the compound of formula II in the presence of an aluminum alkoxide and an anhydrous alcohol.

15. The process of claim 14 wherein the aluminum alkoxide is aluminum isopropoxide.

16. The process of claim 14 wherein the alcohol is isopropanol.

17. The process of claim 12 wherein the acylating comprises heating to reflux in acetic acid and acetic anhydride for about 2 hours to about 5 hours.

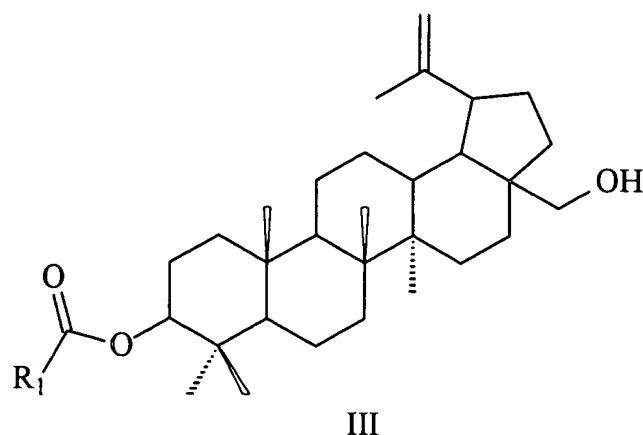
18. The process of claim 12 wherein the acylating comprises heating in pyridine and benzoyl chloride at about 50°C to about 60°C for about 20 hours to about 30 hours.

19. The process of claim 12 wherein the oxidizing of compound III to compound VI comprises palladium acetate, molecular sieves, and oxygen in trifluoromethylbenzene and pyridine at about 80°C to about 85°C for about 0.5 hour to about 4 hours.

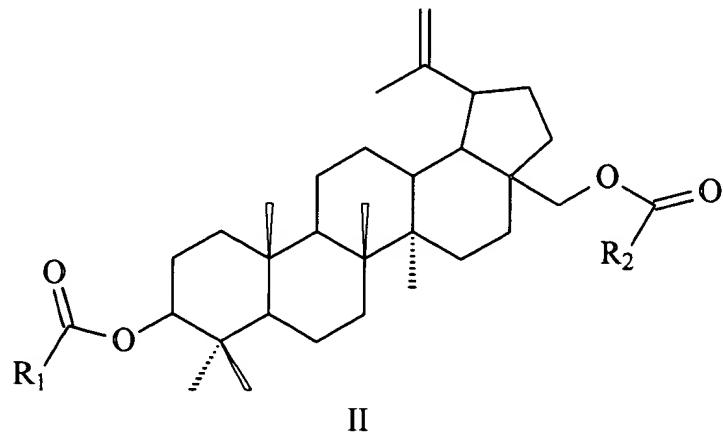
20. The process of claim 12 wherein the oxidizing of compound VI to compound IV comprises oxygen and Cobalt (III) acetylacetone in trifluoromethylbenzene at 60-65°C for about 0.5 hour to about 2 hours.

21. The process of claim 12 wherein the deprotecting comprises heating to reflux in methanol, water and sodium hydroxide.

22. (ONCE AMENDED) A process for preparing a compound of formula III



comprising: alcoholizing a corresponding compound of formula II



wherein  $\text{R}_1$  and  $\text{R}_2$  are each independently  $(\text{C}_1\text{-}\text{C}_{10})\text{alkyl}$ ,  $(\text{C}_2\text{-}\text{C}_{10})\text{alkenyl}$ ,  $(\text{C}_2\text{-}\text{C}_{10})\text{alkynyl}$ , or  $(\text{C}_6\text{-}\text{C}_{10})\text{aryl}$ , wherein any alkyl, alkenyl, alkynyl, or aryl of  $\text{R}_1$  and  $\text{R}_2$ , can be optionally substituted with one or more halo, nitro, cyano, trifluoromethyl, hydroxy,  $\text{SR}$  or  $\text{NRR}$ , wherein each  $\text{R}$  is independently  $\text{H}$  or  $(\text{C}_1\text{-}\text{C}_{10})\text{alkyl}$ ; to provide the compound of formula III.